## REMARKS

While Applicants traverse the rejections in the Office Action, as explained below, in order to advance the prosecution of this application, Applicants are amending Claims 30-32 and 40-41 and adding new Claim 42.

Independent Claim 30 has been amended to recite that the claim is directed to an apparatus for forming thin film on each of a plurality of substrate to make photo-mask blanks, comprising: a sputtering chamber comprising a single sputtering target therein. A similar amendment has been made to independent Claim 40. Support for this amended feature can be found, for example, in Fig. 1 of the present application.

Dependent Claim 31 has been amended to further define the load lock mechanism as a first load lock mechanism and a second load lock mechanism. Support for these claimed features can be found, for example, on page 16, line 10 - page 17, line 25 of the specification and in Fig. 1 of the present application. New dependent Claim 42 has been added to be dependent on Claim 40 and to claim similar features.

Dependent Claims 32 and 41 have been amended to further define the first and second load mechanisms. Support for these features can be found, for example, on page 14, line 27 to page 17, line 12 of the present application.

Accordingly, it is respectfully requested that these amendments be entered and allowed. If any fee should be due for this new claim, please charge our deposit account 50/1039.

Applicants will now address each of the Examiner's rejections in the order in which they appear in the Office Action.

Claim Rejections - 35 USC §102

In the Office Action, the Examiner rejects Claims 30 and 31 under 35 USC §102(b) as being anticipated by Schwartz et al. (US 6,086,728). This rejection is respectfully traversed.

While Applicants traverse this rejection, in order to advance the prosecution of this application, Claims 30 and 31 have been amended as discussed above.

The Examiner contends that Schwartz teaches a sputtering chamber for carrying out sputtering therein to form a thin film on a surface of each substrate in a certain sputtering time and cites col. 5, lines 39-68 and col. 6, lines 1-5 of Schwartz in support thereof. Schwartz, however, is very different than the apparatus of Claims 30 and 31.

In particular, there are no descriptions in Schwartz, in the Examiner's cited sections, of making the sputtering time constant or making an interval time, which runs from an end of the sputtering for one substrate to a start of sputtering for next substrate, constant. The remainder of Schwartz also do not disclose or suggest such time control. As a result, the objectives and apparatus in Schwartz are very different.

Rather, the problem to be solved in Schwartz is to provide an efficient metalizing system and to prevent errors caused by the mixture of multiple titled compact discs (CDs). Schwartz teaches a method for moving the discs diametrically opposite so as to avoid the mixture of multiple titled compact discs, and to improve the metalization process. In contrast to the present invention, Schwartz does not need and therefore has little interest in the strict control of the sputtering film formation, such as controlling the quality of the thin film (exposure wavelength transmittance and phase shift amount), which is one problem to be solved by the present invention.

As described above, due to the fact that the problem to be solved by Schwartz is completely different from that of the present invention, there is a big difference in the constitution of the

apparatus of Schwartz compared to the claimed invention. For example, Schwartz discloses use of two Magnetrons inside the chamber (80 and 82 in FIG.7). It is very difficult to make uniform the quality of the thin films on each of the two substrates which are formed simultaneously in a chamber comprising multiple sputtering targets therein. This is because the effect of electrical discharge in the chamber intervenes, which makes it extremely difficult to make uniform the condition of the film formation of the two sputtering targets. While this means little when high accuracy of film formation is not required, as in Schwartz, it is a big problem for manufacturing a photo mask blank, such as in the present invention.

Furthermore, for the manufacture of a mask blank, it is not suitable to place multiple sputtering targets in a chamber as it increases the source of particles. Films are formed on all parts inside a chamber except on an erosion area of a target. This can potentially cause the generation of particles. Since high accuracy of film quality is not required in Schwartz, Schwartz adopts an apparatus and method, as discussed above, which is very different than the claimed apparatus.

For example, in contrast to Schwartz, the apparatus of independent Claim 30 (and independent Claim 40) discloses a sputtering chamber comprising a single sputtering target therein for carrying out sputtering to form a thin film on each of the plurality of substrates in turn under uniformised condition of the film formation in order to control the phase difference and transmittance of each shift mask blank to be in a certain range. This feature is not disclosed or suggested in Schwartz.

With regard to Claim 31, Claim 31 recites a load lock mechanism. It is unclear if there is a load lock mechanism in Schwartz. Accordingly, in the rejection of the other claims, the Examiner cites Schaefer.

However, like Schwartz, Schaefer is also directed to the manufacture of compact discs,

wherein strict quality control of the thin film is not required. Hence, neither reference suggests or desires the advantageous effect of the present invention.

Further, amended dependent Claim 31 (and new Claim 42) of the present application disclose the collaboration between the sputtering chamber and the load lock mechanism (Schwartz is mainly intended for only sputtering while Schaefer is mainly intended for only the load lock, in contrast to the present invention). Schaefer focuses on improving evacuation in the load lock. According to FIG.3 in Schaefer, the interlock chamber 1 is used for both introducing and discharging workpieces, which does not meet the provisions of the Claims 31 and 42 which have a separate load lock mechanism for each task. Hence, with Schaefer, it is not possible to keep a substrate subject to the film forming on standby in the load lock mechanism.

In contrast, the claimed invention provides a first load lock mechanism solely for introducing the substrate into the sputtering chamber and a second load lock mechanism solely for discharging the substrate with a film formed thereon. If a load lock is used for both introducing and discharge a substrate like Schaefer, it takes time to replace the substrates (some evacuation time may also be required in the load lock chamber) and thereby causes a problem with consistency with the amount of time required to keep the film formation time constant in the sputtering chamber. Further, temperature fluctuations tend to occur with an apparatus such as in Schaefer. As a result, there needs to be collaboration between the film formation time, the interval time and the introduction and discharge of the substrate by the load lock in order to make uniform the condition of the film formation for each substrate, and thereby uniformised film formation with no individual difference is achieved. This however, is not important in Schaefer.

As Schaefer also relates to the fabrication of compact discs, the object of the invention and the accuracy required are completely different from that for manufacturing of a photo mask blank, as

with the claimed invention. Hence, Schaefer does not seem to take the strict control of phase angle or transmittance etc. into consideration. The other cited references do not cover these shortcomings of Schwartz and Schaefer.

Therefore, Claims 30 and 31 are not disclosed or suggested by Schwartz (or Schwartz in view of Schaefer) and are patentable thereover. Accordingly, it is respectfully requested that this rejection be withdrawn.

Claim Rejections - 35 USC §103

Claim 32

The Examiner also rejects Claim 32 under 35 USC §103(a) as being unpatentable over Schwartz in view of Schaefer et al. (WO 00/63460; U.S. 6,669,987). This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, this claim is also patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Claim 33

The Examiner also rejects Claim 33 under 35 USC §103(a) as being unpatentable over Schwartz in view of Tu et al. (U.S. 5,714,285) and Yamanishi et al. (U.S. 5,626,727). This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, this claim is also patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Claims 34-36

The Examiner also rejects Claims 34-36 under 35 USC §103(a) as being unpatentable over Schwartz et al. in view of Tu et al. and Yamanishi et al. in further view of Satoshi (JP 10-303172). This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, these claims are also patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Claim 40

The Examiner also rejects Claim 40 under 35 USC §103(a) as being unpatentable over Schwartz et al. in view of Tu et al. This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, this claim is also patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Claim 41

The Examiner also rejects Claim 41 under 35 USC §103(a) as being unpatentable over Schwartz et al. in view of Tu et al. and in further view of Schaefer et al. This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, this claim is also patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Double Patenting

The Examiner also rejects Claims 30, 33, 34, 35, 36, 37, 38 and 39 provisionally on the grounds of non-statutory obviousness type double patenting as being unpatentable over Claims 6, 7,

9, 12-16 and 26-36 of co-pending application no. 10/821,508 in view of Schwartz et al. This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, there is no obviousness double patenting, and it is respectfully requested that this rejection be withdrawn.

Conclusion

It is respectfully submitted that the present application is in a condition for allowance and should be allowed.

If any further fee is due for this amendment, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

Date: February 16, 2007

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